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NOTICE OF ALLOWANCE AND FEE(S) DUE

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314

EXAMINER ROBINSON, LAUREN E ART UNIT PAPER NUMBER

1784

DATE MAILED: 03/01/2011

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,056	12/19/2006	Carinne Fleury	291436US6PCT	7112

TITLE OF INVENTION: TRANSPARENT SUBSTRATE WHICH CAN BE USED ALTERNATIVELY OR CUMULATIVELY FOR THERMAL

CONTROL, ELECTROMAGNETIC ARMOUR AND HEATED GLAZING

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/01/2011

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

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IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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	7590 03/01.	ock 1 for any change of address) /2011	Fee(s) Transmittal. This c s. Each additional p	ertificate cannot be used f	r domestic mailings of the or any other accompanying nt or formal drawing, must
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						(Depositor's name)
						(Signature)
						(Date)
APPLICATION NO.	FILING DATE		FIRST NAMED INVENTOR	A	TTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,056	12/19/2006	•	Carinne Fleury	•	291436US6PCT	7112
		UBSTRATE WHICH C AND HEATED GLAZIN	CAN BE USED ALTERN NG	ATIVELY OR CU	MULATIVELY FOR TH	HERMAL
APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE F	EE TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	06/01/2011
EXAMI	INER	ART UNIT	CLASS-SUBCLASS			
ROBINSON,	LAUREN E	1784	428-432000			
. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363). Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached. "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.			2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.			
PLEASE NOTE: Unle recordation as set forth (A) NAME OF ASSIC	ess an assignee is identi i in 37 CFR 3.11. Comp inEE	ified below, no assignee oletion of this form is NO	FHE PATENT (print or type data will appear on the pa T a substitute for filing an a (B) RESIDENCE: (CITY	tent. If an assignee ssignment. and STATE OR COU	UNTRY)	_
lease check the appropri	ate assignee category or	categories (will not be pr	rinted on the patent):	Individual 🖵 Corp	oration or other private gro	oup entity Government
a. The following fee(s) are submitted: Issue Fee Publication Fee (No small entity discount permitted) Advance Order - # of Copies			 Payment of Fee(s): (Please A check is enclosed. Payment by credit card The Director is hereby overpayment, to Depos 	. Form PTO-2038 is	attached. the required fee(s), any de	·
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Authorized Signature				Date		
Typed or printed name			Registration No			
This collection of information application. Confident ubmitting the completed his form and/or suggestions 1450. Alexandria V	ntion is required by 37 Ciality is governed by 35 application form to the ons for reducing this builting in 22313-1450. DO	FR 1.311. The informatic U.S.C. 122 and 37 CFR USPTO. Time will vary rden, should be sent to th NOT SEND FEES OR (on is required to obtain or re 1.14. This collection is esti depending upon the indivi e Chief Information Office COMPLETED FORMS TO	tain a benefit by the mated to take 12 mir dual case. Any comr , U.S. Patent and Tr. THIS ADDRESS. S	public which is to file (and nutes to complete, includin ments on the amount of tir ademark Office, U.S. Depa END TO: Commissioner t	by the USPTO to process) g gathering, preparing, and ne you require to complete urtment of Commerce, P.O. For Patents, P.O. Box 1450.

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10/581,056	12/19/2006	Carinne Fleury	291436US6PCT	7112	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER		
			ROBINSON, LAUREN E		
			A DELIBUTE DA DED MILITADED		
			ART UNIT	PAPER NUMBER	
		1784			

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 542 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 542 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

- 1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
- 2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
- 3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
- 4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
- 5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
- 6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
- 7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
- 8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
- 9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

	Application No.	Applicant(s)				
	10/581,056	FLEURY ET AL.				
Notice of Allowability	Examiner	Art Unit				
	LAUREN ROBINSON	1784				
	LAUREN ROBINSON	1784				
The MAILING DATE of this communication appear All claims being allowable, PROSECUTION ON THE MERITS IS herewith (or previously mailed), a Notice of Allowance (PTOL-85) NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIOF of the Office or upon petition by the applicant. See 37 CFR 1.313	(OR REMAINS) CLOSED in this ap or other appropriate communication IGHTS. This application is subject t	plication. If not included n will be mailed in due course. THIS				
1. This communication is responsive to <u>31 January 2011</u> .						
2. \boxtimes The allowed claim(s) is/are $\underline{1-7,10-15,32-36,38-42,53}$ and	<u>55-76</u> .					
 3. Acknowledgment is made of a claim for foreign priority ur a) All b) Some* c) None of the: 1. Certified copies of the priority documents have 2. Certified copies of the priority documents have 3. Copies of the certified copies of the priority documents 	been received. been received in Application No					
International Bureau (PCT Rule 17.2(a)).	cuments have been received in this	national stage application from the				
* Certified copies not received:						
Applicant has THREE MONTHS FROM THE "MAILING DATE" noted below. Failure to timely comply will result in ABANDONN THIS THREE-MONTH PERIOD IS NOT EXTENDABLE. 4. A SUBSTITUTE OATH OR DECLARATION must be subm	IENT of this application.					
INFORMAL PATENT APPLICATION (PTO-152) which give						
5. \square CORRECTED DRAWINGS (as "replacement sheets") must	st be submitted.					
(a) ☐ including changes required by the Notice of Draftspers	- ,	-948) attached				
1) 🔲 hereto or 2) 🔲 to Paper No./Mail Date						
(b) ☐ including changes required by the attached Examiner's Paper No./Mail Date	s Amendment / Comment or in the 0	Office action of				
Identifying indicia such as the application number (see 37 CFR 1 each sheet. Replacement sheet(s) should be labeled as such in t						
6. DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.						
Attachment(s)						
1. Notice of References Cited (PTO-892)	5. Notice of Informal F	• •				
2. Notice of Draftperson's Patent Drawing Review (PTO-948)	6. ☐ Interview Summary Paper No./Mail Da					
3. Information Disclosure Statements (PTO/SB/08),	7. X Examiner's Amend	ment/Comment				
Paper No./Mail Date <u>1/2011</u> 4. ☐ Examiner's Comment Regarding Requirement for Deposit	8. Examiner's Stateme	ent of Reasons for Allowance				
of Biological Material	9.					
/Timothy M. Speer/						
Primary Examiner, Art Unit 1784						

REJOINDER

Claims 1-7, 10-15, 32, 34-36, 38-42 and 53 are directed to an allowable product. Pursuant to the procedures set forth in MPEP § 821.04(B), claims 16-31, 33, 43-45, and 46-51, directed to the process of making or using an allowable product, previously withdrawn from consideration as a result of a restriction requirement, are hereby rejoined and fully examined for patentability under 37 CFR 1.104. Claims 16-31, 33, 43-45, and 46-51 have been rewritten as new claims 55-75. New claims 55-76 include all of the limitations of allowable product claim 1.

Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, the restriction requirement as previously set forth is hereby withdrawn. In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided

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by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michel Bohn on February 9, 2011.

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The application has been amended as follows:

In the claims:

<u>Claim 1</u>: In line 4 bridged to line 5, the phrase "having a silver based functional layer, and at least one of the functional substacks" has been deleted.

In line 7, before the silver-based, "the" has been deleted and ---a--- has been inserted.

Claim 8: Cancelled

Claim 11: In line 2, after "in" and before "at", "the" has been deleted.

Claim 12: In line 2, after "in" and before "at", "the" has been deleted

Claim 13: In line 2, after "wherein" and before "at", "the" has been deleted

Claims 16-31: Cancelled

<u>Claim 32</u>: In line 4 bridged to line 5, the phrase "including a silver based functional layer, and at least one of the functional substacks" has been deleted.

In line 8, before the silver-based, "the" has been deleted and ---a--- has been inserted.

Claim 37: Cancelled

Claims 43-51: Cancelled

Claim 52: Cancelled

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Claim 54: Cancelled

The following new claims have been added;

<u>Claim 55:</u> A process for manufacturing a transparent substrate including glass and provided with a thin-film stack, the process comprising:

depositing on the transparent substrate a thin-film stack including at least three functional substacks of layers, each of the functional substacks having a structure including

a low dielectric layer,

a silver-based functional layer

an upper dielectric layer, and

an upper layer of Si₃N₄, AlN, or a mixture of Si₃N₄ and AlN

wherein the thin-film stack has a resistance R< 1.5 Ω per square, and the transparent substrate is transformable via a heat treatment at a temperature of at least 500 $^{\circ}$ C.

<u>Claim 56</u>: The process as claimed in claim 55, wherein at least four silver-based functional layers are deposited on the substrate.

<u>Claim 57</u>: The process as claimed in claim 55, wherein the total thickness of silver-based functional layers in the thin-film stack is greater than or equal to 25nm.

<u>Claim 58</u>: The process as claimed in claim 55, wherein each of the functional substacks associates the silver-based functional layer with at least one subjacent of superjacent layer.

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Claim 59: The process as claimed in claim 55, wherein the transparent substrate is directly coated with a layer based on Si_3N_4 , AIN or a mixture of Si_3N_4 and AIN.

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<u>Claim 60</u>: The process as claimed in claim 55, wherein, in at least one of the functional substacks, an upper absorbent metal layer is deposited on top of the silver-based functional layer and beneath at least one upper dielectric layer.

<u>Claim 61</u>: The process as claimed in claim 55, wherein, in at least one of the functional substacks, a lower absorbent metal layer is deposited on top of at least one lower dielectric layer and beneath the silver-based functional layer.

Claim 62: The process as claimed in claim 55, wherein, at least one of the functional substacks deposited has the following structure: ZnO/Ag/.../ZnO/ Si₃N₄.

Claim 63: The process as claimed in claim 62, wherein,

the thin-film stack includes three silver-based functional layers, and

the corresponding thicknesses of the constituent layers of the at least one of the functional substacks of the structure: $ZnO/Ag/.../ZnO/Si_3N_4$ are: 5 to 15/10 to 17/...5 to 15/25 to 65nm.

Claim 64: The process as claimed in claim 62, wherein,

the thin-film stack includes four silver-based functional layers, and

the corresponding thicknesses of the constituent layers of the at least one of the functional substacks of the structure: $ZnO/Ag/.../ZnO/Si_3N_4$ are: 5 to 15/7 to 15/...5 to 15/23 to 65nm.

<u>Claim 65</u>: The process as claimed in claim 55, wherein the functional substacks are deposited by passing the substrate several times through a single manufacturing device.

<u>Claim 66</u>: The process as claimed in claim 65, wherein the thin-film stack comprises four silver-based functional layers and the functional substacks are deposited in pairs by passing the substrate twice through the single manufacturing device.

<u>Claim 67</u>: The process as claimed in claim 66, wherein the thicknesses of layers of the deposited functional substacks are substantially identical during each of the two passes.

Claim 68: The process as claimed in claim 55, wherein the transparent substrate is transformable via a heat treatment at a temperature of at least 500 °C such that the resistance R of the transparent substrate is reduced by at least 10%.

Claim 69: The process as claimed in claim 55, wherein in a thin-film stack including three silver-based functional layers, the total thickness of the silver-based functional layers deposited is between 35 and 50nm, and in a thin-film stack including at least four silver-based functional layers, the total thickness of the silver-based functional layers deposited is between 28 and 64nm.

<u>Claim 70:</u> The process as claimed in claim 55, wherein, for each of the functional substacks, the lower dielectric layer is deposited beneath the silver-based functional layer and the upper dielectric layer is deposited on the silver-based functional layer,

wherein the lower dielectric layer and the upper dielectric layer are based on ZnO and dopeable with aluminum.

<u>Claim 71:</u> The process as claimed in claim 55, wherein, in each of the functional substacks, an upper absorbent metal layer based on Ti is deposited on top of the silver-based functional layer and beneath the upper dielectric layer.

Claim 72: The process as claimed in claim 55, wherein, in each of the functional substacks, a lower absorbent metal layer based on Ti is deposited on top of the lower dielectric layer and beneath the silver-based functional layer.

Claim 73: The process as claimed in claim 55, wherein, each of the functional substacks deposited has the following structure: ZnO/Ag/Ti/ZnO/ Si₃N₄.

<u>Claim 74</u>: The process as claimed in claim 73, wherein, the thin-film stack includes three silver-based functional layers and the corresponding thicknesses of the constituent layers of each of the functional substacks of the structure: : ZnO/Ag/Ti/ZnO/Si₃N₄ are: 5 to 15/10 to 17/0.2 to 3/5 to 15/25 to 65nm.

Claim 75: The process as claimed in claim 73, wherein, the thin-film stack includes four silver-based functional layers and the corresponding thicknesses of the constituent layers of each of the functional substacks of the structure: : $ZnO/Ag/Ti/ZnO/Si_3N_4$ are: 5 to 15/7 to 15/0.2 to 3/5 to 15/23 to 65nm.

<u>Claim 76</u>: The process as claimed in claim 68, wherein the resistance R of the transparent substrate is reduced by at least 15%.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAUREN ROBINSON whose telephone number is

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(571)270-3474. The examiner can normally be reached on Monday to Thursday 6am to

4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LAUREN ROBINSON/ Examiner, Art Unit 1784

/Timothy M. Speer/ Primary Examiner, Art Unit 1784